

REMARKS

Claims 1-28 are pending in the present application. Claims 1, 2, 4, 5, 7-11, and 13-18 have been rejected under 35 USC § 103(a). Claims 3, 6, and 12 have been objected to but are otherwise allowable. Claims 1, 4, 7, and 13-18 have been amended. Claims 19-28 have been newly added.

The Applicants appreciate the Examiner's thorough examination of the subject application and respectfully request reconsideration of the subject application based on the above amendments and the following remarks.

35 U.S.C. § 103(a) REJECTIONS

The Examiner has rejected claims 1, 2, 4, 5, 7-11, and 13-18 under 35 USC § 103(a) as unpatentable over U.S. Patent Number 5,617,384 to Yonemitsu ("Yonemitsu" or the "Yonemitsu Reference") in view of U.S. Patent Number 4,703,408 to Yonezawa, et al. ("Yonezawa" or the "Yonezawa Reference"). The Applicants respectfully traverse these rejections in view of the above amendments and for the reasons provided below.

The Examiner asserts that, the Yonemitsu reference teaches the invention as claimed with the exception that, Yonemitsu does not disclose an optical disk in which "concave and convex areas formed as concave and convex sections on a disk substrate are arranged along a track with constant intervals". According to the Examiner, however, this feature is disclosed in the Yonezawa reference. Although, the Applicants agree that Yonemitsu does not disclose an optical disk in which "concave and convex areas formed as concave and convex sections on a disk substrate are arranged along a track with constant intervals", the Applicants respectfully disagree that Yonemitsu teaches the invention as claimed and, further, that, Yonezawa teaches the feature missing from Yonemitsu.

Yonegawa discloses an optical disk on which pit areas are provided periodically. Although, Yonegawa describes a periodic arrangement of pit areas, it is completely silent on the two-dimensional arrangement of recorded data. Yonemitsu discloses an arrangement in which the ECC block consists of 16 sectors, each of which has a sector header. With respect to the array of user data, i.e., input data, Yonemitsu describes preparation of a two-dimensional array by adding additional information to the user data, adding parity diagonal-direction coding sequence and row-direction coding sequence, and reading data in the row-direction so as to record data on the disk. However, Yonemitsu merely discloses a read-only (ROM) disk format in which all information is formed in the pits.

The present invention discloses an optical disk recording method that includes an error-correction encoding sequence that doubly combines data. See, e.g., Specification, page 2, lines 10-12. More specifically, the present invention includes a sample servo data arrangement system using servo fields SF that are formed as concave and convex sections on the disk substrate.

A first encoding parity P1, a second encoding parity P2 based on two error-correction sequences and a control code C are added to data arranged in a two-dimensional array. See, e.g., Id., page 17, line 23 to page 18, line 1 and page 19, lines 21-25. Application of the first encoding parity P1 corrects errors occurring randomly in the coding sequence in a diagonal direction. The first encoding parity P1 is

prepared as a parity of 16 bytes obtained as a result of an encoding process that is carried out on a data alignment in a diagonal direction (in a direction in which as one advance is made in the row direction, one drop is made in the column direction) by using a Reed-Solomon code with a code minimum distance of 17.

Id., page 18, lines 2-7. This prevents errors from concentrating on a specific code sequence due to the high error rate at the ends of the recording area. See, e.g., Id., page 21, lines 5-14. Indeed,

it becomes possible to form data and parities contained in one coding sequence by using data and parities derived from

respectively different rows. Therefore, it is possible to provide an effective interleaving process and also to increase the encoding efficiency.

Id., page 22, lines 7-12 (Emphasis added).

Application of the second encoding parity P2 corrects errors occurring randomly in the coding system in a lateral direction.

Using the illustrative example in specification, each row of 200 bytes of recorded data in the two-dimensional array is divided into 4 data field DF segments of 50 bytes each and 12 rows of data are, further, recorded on a frame. See, e.g., Id., page 20, lines 3-17. The practical effect of this arrangement is that data to be placed at the end of the data field DF are concentrated at specific columns in the two-dimensional array.

Claims 7-12

Yonemitsu does not teach, mention or suggest that, the "bit number n of the data are sandwiched between the pit areas." Moreover, Yonemitsu does not teach, mention or suggest that an "ECC parity portion is provided next to the pit area" or that this configuration is meant to "exchange the data in each row." Accordingly, the Applicants assert that, Claim 7 and all claims depending therefrom are not anticipated or made obvious by the Yonemitsu reference in view of the Yonegawa reference and further, satisfy all of the requirements of 35 U.S.C. 100, et seq., especially § 103(a). Accordingly, claims 7-12 are allowable. Moreover, it is respectfully submitted that the subject application is in condition for allowance. Early and favorable action is requested.

New Claims 19-25

Accordingly, it is respectfully submitted that, claims 19-25 are not anticipated or made obvious by the Yonemitsu and/or Yonezawa references and further, satisfy all of the requirements of 35 U.S.C. 100, et seq., especially § 103(a). Accordingly, claims 19-

25 are allowable. Moreover, it is respectfully submitted that the subject application is in condition for allowance. Early and favorable action is requested.

New Claims 26-28

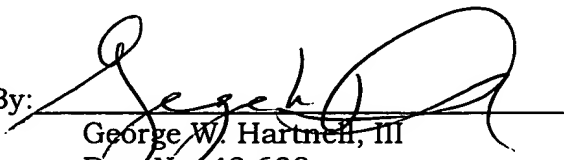
New claims 26-28 are claims 3, 6, and 12 re-written in independent form, which the Examiner has indicated would be allowable. Indeed, the Examiner admits that, the cited references do not teach, mention or suggest that if the number of data related to one logical sector is l byte (l : natural number greater than m), $l = c \times m$ (c : natural number) is satisfied and that the minimum combination of a and b that satisfies $a \times m = b \times n$ are a_{\min} and b_{\min} , where a_{\min} is set to a divisor of c that is smaller than c .

Accordingly, it is respectfully submitted that, claims 26-28 are not anticipated or made obvious by the Yonemitsu and/or Yonezawa references and further, satisfy all of the requirements of 35 U.S.C. 100, et seq., especially § 103(a). Accordingly, claims 26-28 are allowable. Moreover, it is respectfully submitted that the subject application is in condition for allowance. Early and favorable action is requested.

If for any reason a fee paid is inadequate or credit is owed for any excess fee paid, you are hereby authorized and requested to charge or credit Deposit Account No. **04-1105**.

Respectfully submitted,

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